

MEMORANDUM

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

NORTHERN REGIONAL OFFICE

13901 Crown Court

Woodbridge, VA 22193

SUBJECT: Modification of VPDES Permit VA0020460
TO: Vint Hill Farms Station WWTP 2010 Modification File
FROM: Susan Mackert
DATE: July 13, 2010

On May 19, 2010, The Department of Environmental Quality – Northern Regional Office (DEQ-NRO) received a permit modification request from the Fauquier County Water and Sanitation Authority. The modification was requested by the permittee to address the termination of the Authority's pretreatment program and to revise permit language accordingly. This memorandum summarizes the changes to the permit and serves as the modification to the original Fact Sheet.

The following discussions are numbered as they appear in the original Fact Sheet. The information contained in this memorandum replaces or expands upon the information in the Fact Sheet.

20b. Other Permit Requirements – Pretreatment Program

Background Information and Rationale

The Pretreatment Program for Fauquier County Water and Sanitation Authority was originally approved on March 21, 2006. One Significant Industrial User (SIU) was identified and regulated through this program (Old Dominion Electric Cooperative – Marsh Run Generation Facility).

In correspondence dated May 6, 2010, the Fauquier County Water and Sanitation Authority proposed to delist the Old Dominion Electric Cooperative – Marsh Run Generation Facility as a SIU and to revoke the facility's SIU discharge permit. By letter dated May 19, 2010, DEQ had no objection to the delisting.

A review of industrial survey results submitted by the Fauquier County Water and Sanitation Authority on May 26, 2010, indicated that no SIUs have been found to discharge to the collection system of the Vint Hill Farms Station WWTP. Based on this review and the delisting of the Old Dominion Electric Cooperative – Marsh Run Generation Facility, DEQ staff determined the Fauquier County Water and Sanitation Authority may terminate the pretreatment program for the Vint Hill Farms Station WWTP.

By letter dated June 21, 2010, the Fauquier County Water and Sanitation Authority was advised that although the pretreatment program may be terminated the Authority is still responsible for monitoring industrial user flow to the collection system. If the Fauquier County Water and Sanitation Authority determines that significant industrial users are present, implementation of a pretreatment program shall begin. DEQ guidance recommends that publicly owned treatment works with flows =40,000 gpd and with no approved program or conditional program conduct an industrial user survey every five years. As such, a requirement to conduct an industrial user survey within 180 days of the next permit reissuance in 2014 shall be included in the modified permit for the Vint Hill Farms Station WWTP.

23. Changes to Permit from the Previously Issued Permit

a) Special Conditions

- A special condition was added to reflect the requirement to submit to DEQ an updated and complete survey of all industrial users discharging to the Vint Hill Farms Station WWTP collection system within 180 days of the next reissuance.

b) Monitoring and Effluent Limitations

- Pretreatment program language was removed to reflect the termination of the Authority's program.
- In response to pretreatment language being removed from the permit, Other Requirements and Special Conditions are now found within Part I.C rather than Part I.D.

Public Notice – Environmental Permit

PURPOSE OF NOTICE: To seek public comment on 1) the proposed termination of the Fauquier County Water and Sanitation Authority's Pretreatment Program, and 2) the proposed modifications of permits from the Department of Environmental Quality that allow the release of treated wastewater into a water body in Fauquier County, Virginia.

PUBLIC COMMENT PERIOD: **TBD**, 2010 to 5:00 p.m. on **TBD**, 2010

PERMIT NAME: Virginia Pollutant Discharge Elimination System Permit – Wastewater issued by DEQ, under the authority of the State Water Control Board

APPLICANT NAME, ADDRESS AND PERMIT NUMBERS: Fauquier County Water and Sanitation Authority, 7172 Kennedy Road, Warrenton, VA 20187, VA0020460, VA0031763, and VA0076805

NAME AND ADDRESS OF FACILITIES: Vint Hill Farms Station WWTP, 4266 Backe Drive, Warrenton, VA 20187
Marshall WWTP, 4319 Old Morgantown Road, Marshall, VA 20115
Remington WWTP, 12523 Lucky Hill Road, Remington, VA 22734

PRETREATMENT PROGRAM TERMINATION: The Pretreatment Program for Fauquier County Water and Sanitation Authority was originally approved on March 21, 2006. One Significant Industrial User (SIU) was identified and regulated through this program. The Fauquier County Water and Sanitation Authority has delisted the SIU and subsequently revoked the facility's SIU discharge permit in May 2010. The Fauquier County Water and Sanitation Authority has requested termination of the County's approved program.

PROJECT DESCRIPTION – PERMIT MODIFICATIONS: The Fauquier County Water and Sanitation Authority has applied for modifications of the permits for the public facilities listed above as the applicant proposes to terminate the County's pretreatment program. Termination of the pretreatment program does not effect already established effluent limitations and monitoring requirements for the facilities listed above.

The Fauquier County Water and Sanitation Authority has applied for a modification of the permit for the public Vint Hill Farms Station WWTP to remove pretreatment program requirements. The permit will continue to limit the following pollutants to amounts that protect water quality: pH, BOD₅, Total Suspended Solids, *E. coli*, Ammonia, Total Phosphorus, and Total Nitrogen. This facility is subject to the requirements of 9VAC25-820 and is registered for coverage under the General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Watershed in Virginia.

The Fauquier County Water and Sanitation Authority has applied for a modification of the permit for the public Marshall WWTP to remove pretreatment program requirements. The permit will continue to limit the following pollutants to amounts that protect water quality: flow, pH, CBOD₅, TSS, DO, TKN, and *E. coli*. This facility is subject to the requirements of 9VAC25-820 and is registered for coverage under the General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Watershed in Virginia.

The Fauquier County Water and Sanitation Authority has applied for a modification of the permit for the public Remington WWTP to remove pretreatment program requirements. The permit will continue to limit the following pollutants to amounts that protect water quality: pH, CBOD₅, Total Suspended Solids, Dissolved Oxygen, Total Kjeldahl Nitrogen, Total Recoverable Zinc, *E. coli*, and Chronic Toxicity. This facility is subject to the requirements of 9VAC25-820 and is registered for coverage under the General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Watershed in Virginia.

HOW TO COMMENT AND/OR REQUEST A PUBLIC HEARING: DEQ accepts comments and requests for public hearing by e-mail, fax or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requestor, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. A public hearing may be held, including another comment period, if public response is significant, based on individual requests for a public hearing, and there are substantial, disputed issues relevant to the permit.

HOW TO COMMENT ON THE PRETREATMENT PROGRAM TERMINATION: DEQ accepts comments by e-mail, fax or postal mail. All comments must be in writing and be received by DEQ during the comment period. The public also may request a public meeting. Written comments should include the names, mailing addresses and telephone

numbers of the person commenting. To review pretreatment program documents, please contact Anna Westernik at anna.westernik@deq.virginia.gov; (703) 583-3837.

CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS AND ADDITIONAL INFORMATION ON THE PERMIT MODIFICATIONS: The public may review the documents at the DEQ-Northern Regional Office by appointment, or may request electronic copies of the draft permit and fact sheet.

Name: Susan Mackert

Address: DEQ-Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193

Phone: (703) 583-3853 E-mail: susan.mackert@deq.virginia.gov Fax: (703) 583-3821

**State "Transmittal Checklist" to Assist in Targeting
Municipal and Industrial Individual NPDES Draft Permits for Review**

Part I. State Draft Permit Submission Checklist

In accordance with the MOA established between the Commonwealth of Virginia and the United States Environmental Protection Agency, Region III, the Commonwealth submits the following draft National Pollutant Discharge Elimination System (NPDES) permit for Agency review and concurrence.

Facility Name: Vint Hill WWTP
 NPDES Permit Number: VA0020460
 Permit Writer Name: Susan Mackert
 Date: July 14, 2010

Major [] **Minor** [X] **Industrial** [] **Municipal** [X]

I.A. Draft Permit Package Submittal Includes:

	Yes	No	N/A
1. Permit Application?	X		
2. Complete Draft Permit (for renewal or first time permit – entire permit, including boilerplate information)?	X		
3. Copy of Public Notice?	X		
4. Complete Fact Sheet?	X		
5. A Priority Pollutant Screening to determine parameters of concern?	X		
6. A Reasonable Potential analysis showing calculated WQBELs?	X		
7. Dissolved Oxygen calculations?		X	
8. Whole Effluent Toxicity Test summary and analysis?		X	
9. Permit Rating Sheet for new or modified industrial facilities?			X

I.B. Permit/Facility Characteristics

	Yes	No	N/A
1. Is this a new, or currently unpermitted facility?		X	
2. Are all permissible outfalls (including combined sewer overflow points, non-process water and storm water) from the facility properly identified and authorized in the permit?	X		
3. Does the fact sheet or permit contain a description of the wastewater treatment process?	X		
4. Does the review of PCS/DMR data for at least the last 3 years indicate significant non-compliance with the existing permit?	X		
5. Has there been any change in streamflow characteristics since the last permit was developed?	X		
6. Does the permit allow the discharge of new or increased loadings of any pollutants?		X	
7. Does the fact sheet or permit provide a description of the receiving water body(s) to which the facility discharges, including information on low/critical flow conditions and designated/existing uses?	X		
8. Does the facility discharge to a 303(d) listed water?	X		
a. Has a TMDL been developed and approved by EPA for the impaired water?	X		
b. Does the record indicate that the TMDL development is on the State priority list and will most likely be developed within the life of the permit?			X
c. Does the facility discharge a pollutant of concern identified in the TMDL or 303(d) listed water?	X		
9. Have any limits been removed, or are any limits less stringent, than those in the current permit?		X	
10. Does the permit authorize discharges of storm water?		X	

	Yes	No	N/A
I.B. Permit/Facility Characteristics – cont.			
11. Has the facility substantially enlarged or altered its operation or substantially increased its flow or production?	X		
12. Are there any production-based, technology-based effluent limits in the permit?		X	
13. Do any water quality-based effluent limit calculations differ from the State's standard policies or procedures?		X	
14. Are any WQBELs based on an interpretation of narrative criteria?	X		
15. Does the permit incorporate any variances or other exceptions to the State's standards or regulations?		X	
16. Does the permit contain a compliance schedule for any limit or condition?		X	
17. Is there a potential impact to endangered/threatened species or their habitat by the facility's discharge(s)?		X	
18. Have impacts from the discharge(s) at downstream potable water supplies been evaluated?	X		
19. Is there any indication that there is significant public interest in the permit action proposed for this facility?		X	
20. Have previous permit, application, and fact sheet been examined?	X		

Part II. NPDES Draft Permit Checklist

Region III NPDES Permit Quality Checklist – for POTWs

II.A. Permit Cover Page/Administration

	Yes	No	N/A
1. Does the fact sheet or permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)?	X		
2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)?	X		

II.B. Effluent Limits – General Elements

	Yes	No	N/A
1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)?	X		
2. Does the fact sheet discuss whether “antibacksliding” provisions were met for any limits that are less stringent than those in the previous NPDES permit?			X

II.C. Technology-Based Effluent Limits (POTWs)

	Yes	No	N/A
1. Does the permit contain numeric limits for <u>ALL</u> of the following: BOD (or alternative, e.g., CBOD, COD, TOC), TSS, and pH?	X		
2. Does the permit require at least 85% removal for BOD (or BOD alternative) and TSS (or 65% for equivalent to secondary) consistent with 40 CFR Part 133?	X		
a. If no, does the record indicate that application of WQBELs, or some other means, results in more stringent requirements than 85% removal or that an exception consistent with 40 CFR 133.103 has been approved?			X
3. Are technology-based permit limits expressed in the appropriate units of measure (e.g., concentration, mass, SU)?	X		
4. Are permit limits for BOD and TSS expressed in terms of both long term (e.g., average monthly) and short term (e.g., average weekly) limits?	X		
5. Are any concentration limitations in the permit less stringent than the secondary treatment requirements (30 mg/l BOD5 and TSS for a 30-day average and 45 mg/l BOD5 and TSS for a 7-day average)?		X	
a. If yes, does the record provide a justification (e.g., waste stabilization pond, trickling filter, etc.) for the alternate limitations?			X

II.D. Water Quality-Based Effluent Limits

	Yes	No	N/A
1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality?	X		
2. Does the fact sheet indicate that any WQBELs were derived from a completed and EPA approved TMDL?	X		
3. Does the fact sheet provide effluent characteristics for each outfall?	X		
4. Does the fact sheet document that a “reasonable potential” evaluation was performed?	X		
a. If yes, does the fact sheet indicate that the “reasonable potential” evaluation was performed in accordance with the State’s approved procedures?	X		
b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone?	X		
c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have “reasonable potential”?	X		
d. Does the fact sheet indicate that the “reasonable potential” and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations)?		X	
e. Does the permit contain numeric effluent limits for all pollutants for which “reasonable potential” was determined?	X		

II.D. Water Quality-Based Effluent Limits – cont.	Yes	No	N/A
5. Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet?	X		
6. For all final WQBELs, are BOTH long-term AND short-term effluent limits established?	X		
7. Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)?	X		
8. Does the record indicate that an “antidegradation” review was performed in accordance with the State’s approved antidegradation policy?	X		

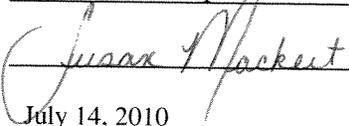
II.E. Monitoring and Reporting Requirements	Yes	No	N/A
1. Does the permit require at least annual monitoring for all limited parameters and other monitoring as required by State and Federal regulations?	X		
a. If no, does the fact sheet indicate that the facility applied for and was granted a monitoring waiver, AND, does the permit specifically incorporate this waiver?			
2. Does the permit identify the physical location where monitoring is to be performed for each outfall?	X		
3. Does the permit require at least annual influent monitoring for BOD (or BOD alternative) and TSS to assess compliance with applicable percent removal requirements?		X	
4. Does the permit require testing for Whole Effluent Toxicity?		X	

II.F. Special Conditions	Yes	No	N/A
1. Does the permit include appropriate biosolids use/disposal requirements?	X		
2. Does the permit include appropriate storm water program requirements?			X
3. If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements?			X
4. Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations?	X		
5. Does the permit allow/authorize discharge of sanitary sewage from points other than the POTW outfall(s) or CSO outfalls [i.e., Sanitary Sewer Overflows (SSOs) or treatment plant bypasses]?		X	
6. Does the permit authorize discharges from Combined Sewer Overflows (CSOs)?		X	
a. Does the permit require implementation of the “Nine Minimum Controls”?			X
b. Does the permit require development and implementation of a “Long Term Control Plan”?			X
c. Does the permit require monitoring and reporting for CSO events?			X
7. Does the permit include appropriate Pretreatment Program requirements?			X

II.G. Standard Conditions	Yes	No	N/A
1. Does the permit contain all 40 CFR 122.41 standard conditions or the State equivalent (or more stringent) conditions?	X		
List of Standard Conditions – 40 CFR 122.41			
Duty to comply	Property rights	Reporting Requirements	
Duty to reapply	Duty to provide information	Planned change	
Need to halt or reduce activity not a defense	Inspections and entry	Anticipated noncompliance	
Duty to mitigate	Monitoring and records	Transfers	
Proper O & M	Signatory requirement	Monitoring reports	
Permit actions	Bypass	Compliance schedules	
	Upset	24-Hour reporting	
		Other non-compliance	
2. Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for POTWs regarding notification of new introduction of pollutants and new industrial users [40 CFR 122.42(b)]?	X		

Part III. Signature Page

Based on a review of the data and other information submitted by the permit applicant, and the draft permit and other administrative records generated by the Department/Division and/or made available to the Department/Division, the information provided on this checklist is accurate and complete, to the best of my knowledge.

Name	<u>Susan Mackert</u>
Title	<u>Environmental Specialist II Senior</u>
Signature	<u></u>
Date	<u>July 14, 2010</u>

This document gives pertinent information concerning the reissuance of the VPDES Permit listed below. This permit is being processed as a **Minor, Municipal** permit. The discharge results from the operation of a 0.60 MGD wastewater treatment plant with future expansion for 0.95 MGD. This permit action consists of updating the WQS and updating boilerplate language. The effluent limitations and special conditions contained in this permit will maintain the Water Quality Standards of 9 VAC 25-260-00 et seq.

1. Facility Name and Mailing Address: Vint Hill Wastewater Treatment Plant SIC Code : 4952 - WWTP
4266 Backe Drive
Warrenton, VA 20187

Facility Location: 4266 Backe Drive County: Fauquier
Warrenton, VA 20187

Facility Contact Name: Mr. Bo Backe Telephone Number: 540-349-2500
2. Permit No.: VA0020460 Expiration Date of previous permit: October 27, 2008

Other VPDES Permits associated with this facility: VAN020053
Other Permits associated with this facility: N/A
E2/E3/E4 Status: N/A
3. Owner Name: Fauquier County Water and Sanitation Authority
Owner Contact/Title: Mr. Wesley Basore – Director of Operations Telephone Number: (540) 349-2092
4. Application Complete Date: May 28, 2008
Permit Drafted By: Susan Mackert Date Drafted: August 6, 2008
Draft Permit Reviewed By: Alison Thompson Date Reviewed: September 3, 2008
Public Comment Period : Start Date: February 5, 2009 End Date: March 6, 2009
5. Receiving Waters Information:
Receiving Stream Name : Kettle Run
Drainage Area at Outfall: < 2.5 sq.mi. River Mile: KET014.33
Stream Basin: Potomac Subbasin: Lower Potomac
Section: 7a Stream Class: III
Special Standards: g Waterbody ID: VAN-A19R
7Q10 Low Flow: 0 MGD 7Q10 High Flow: 0 MGD
1Q10 Low Flow: 0 MGD 1Q10 High Flow: 0 MGD
Harmonic Mean Flow: 0 MGD 30Q5 Flow: 0 MGD
303(d) Listed: Kettle Run, UT - No 30Q10 Flow: 0 MGD
303 (d) Listed: Kettle Run - Yes
TMDL Approved: No (VAN-A19R_KET02A04) Date TMDL Due: Due 2018 (bacteria)
TMDL Approved: Yes (VAN-A19R_KET01A00) Date TMDL Approved: 11-15-06 (bacteria)
It is staff's best professional judgement that based on a drainage area of 5 sq.mi or less, critical flows will be equal to 0.

6. Statutory or Regulatory Basis for Special Conditions and Effluent Limitations:

- | | |
|---|---|
| <input checked="" type="checkbox"/> State Water Control Law | <input checked="" type="checkbox"/> EPA Guidelines |
| <input checked="" type="checkbox"/> Clean Water Act | <input checked="" type="checkbox"/> Water Quality Standards |
| <input checked="" type="checkbox"/> VPDES Permit Regulation | <input checked="" type="checkbox"/> Other: Occoquan Policy |
| <input checked="" type="checkbox"/> EPA NPDES Regulation | |

7. Licensed Operator Requirements: Class II

8. Reliability Class: Class I

9. Permit Characterization:

- | | | |
|--|---|---|
| <input type="checkbox"/> Private | <input type="checkbox"/> Effluent Limited | <input type="checkbox"/> Possible Interstate Effect |
| <input type="checkbox"/> Federal | <input checked="" type="checkbox"/> Water Quality Limited | <input type="checkbox"/> Compliance Schedule Required |
| <input type="checkbox"/> State | <input type="checkbox"/> Toxics Monitoring Program Required | <input type="checkbox"/> Interim Limits in Permit |
| <input checked="" type="checkbox"/> POTW | <input checked="" type="checkbox"/> Pretreatment Program Required | <input type="checkbox"/> Interim Limits in Other Document |
| <input checked="" type="checkbox"/> TMDL | | |

10. Wastewater Sources and Treatment Description:

The Vint Hill WWTP receives domestic wastewater from the Vint Hill Farms community. The existing permit addresses both a permitted flow of 0.246 MGD via Outfall 001 to South Run and potential expansion of the facility with flow tiers of 0.60 MGD and 0.95 MGD via Outfall 001 to Kettle Run. Per the existing permit, the relocation of Outfall 001 to Kettle Run is to be done in conjunction with expansion so that discharge of higher flows in proximity to a public water supply (Lake Manassas) can be avoided. The facility was issued a Certificate to Operate (CTO) for the expansion on March 26, 2008, and the subsequent relocation of the discharge location to Kettle Run was completed on May 6, 2008. As of this reissuance, the plant is treating wastewater at the 0.60 MGD flow tier.

The Vint Hill WWTP process consists of influent flow measurement, screening, grit removal, activated sludge treatment, filtration, effluent flow measurement, UV disinfection and post aeration (cascade) prior to discharge to Kettle Run.

Wastewater flow to the plant is pumped to the headworks via a 16" force main from the New Baltimore Pump Station No. 2. The pump station consists of three submersible pumps, a valve vault and metering vault. Influent flow rate to the plant is measured by an ultrasonic flow meter on the 16" force main.

Influent entering the WWTP passes through the screening facility which contains one mechanically cleaned bar screen and a manually cleaned bar screen. Debris is discharged to a dumpster for disposal. Screened wastewater then flows by gravity to the grit removal system. The grit removal system consists of an aeration unit and grit air lift unit. Grit is discharged to a dumpster for removal.

Screened, dewatered wastewater then flows by gravity to the biological treatment facility which consists of two sequencing batch reactors (SBR) and DynaSand upflow continuous backwash filters. Each SBR includes a 2.4 HP submersible, non-clog transfer pump located at the bottom of the unit. The transfer pump is used to waste sludge from the system to the aerobic digester. Effluent from the SBRs flows by gravity to the Post Equalization Basin where it is pumped to the upflow, continuous backwash DynaSand filters. The primary purpose of the DynaSand filters is for solids removal. However, chemical feed facilities have been provided upstream of the filters. A Methanol feed facility is utilized to enhance denitrification within the filters and an Alum feed facility is utilized for the chemical removal of phosphorus upstream of the filters.

Filtered effluent is then directed to the post aeration facilities which consist of two parallel cascade aerators. Each aerator is approximately three feet wide and consists of 13, one foot tall steps. The discharge end of the cascade aerator is provided with v-notch weirs to provide an equal distribution or split flow to the three UV channels located downstream.

Disinfection is provided using ultraviolet (UV) light. The UV facility consists of three channels with each channel containing two banks or four modules each, with six lamps per module.

Plant effluent is discharged to a 16" force main. An ultrasonic flow meter is located within a separate metering vault downstream of the effluent pump station to measure final effluent flow.

A facility schematic/diagram was provided as part of the application package and is available within the permit reissuance file.

TABLE 1 – Outfall Description

Outfall Number	Discharge Sources	Treatment	Average Flow	Outfall Latitude and Longitude
001	Domestic Wastewater	See Item 10 above	0.107 MGD	38° 44' 18.1" N 77° 41' 37.1" W
See Attachment 1 for (Catlett, DEQ #195B) topographic map.				

11. Sludge Treatment and Disposal Methods:

Sludge and/or residuals from the Vint Hill WWTP are stabilized in two aerobic digesters. Digested sludge is then dewatered using a belt press and is then transported to either the Fauquier County Landfill for disposal or the Remington WWTP for eventual land application.

Recyc Systems, Incorporated serves as the contractor for Remington WWTP. Recyc Systems does not have dedicated land application sites for the biosolids generated at the Remington WWTP. Recyc Systems holds 29 Virginia Biosolids Use Permits from the Virginia Department of Environmental Quality (previously issued by the Virginia Department of Health) with over 700 multiple landowner sites. Biosolids from the Remington WWTP are an approved biosolids source under all of the 29 BUR permits listed below.

VDHBUR 3	VDHBUR 8	VDHBUR 69	VDHBUR 100	VDHBUR 118	VDHBUR 132
VDHBUR 4	VDHBUR 9	VDHBUR 86	VDHBUR 103	VDHBUR 119	VDHBUR 135
VDHBUR 5	VDHBUR 16	VDHBUR 89	VDHBUR 104	VDHBUR 120	VDHBUR 137
VDHBUR 6	VDHBUR 22	VDHBUR 95	VDHBUR 115	VDHBUR 129	VDHBUR 140
VDHBUR 7	VDHBUR 61	VDHBUR 97	VDHBUR 116	VDHBUR 130	

Please see the Remington WWTP permit reissuance file for the BUR permits submitted as part of Remington's 2008 application process.

12. Discharges, Intakes, Monitoring Stations, Other Items in Vicinity of Discharge :

The permitted facilities listed below discharge to Kettle Run or Kettle Run, UT both of which are within the waterbody VAN-A19R.

TABLE 2	
1aKET012.03	DEQ ambient / special studies station located at the Route 761 bridge crossing.
1aKET002.06	DEQ ambient water quality monitoring station at the Route 611 crossing.
VAG406233	PWCPS – Transportation Area (Kettle Run, UT)
VAG406271	Megan Judge Residence (Kettle Run)
VAG406292	Robert Glasgow Residence (Kettle Run, UT)
VAG406333	David Rupp Residence (Kettle Run, UT)
VAG406420	Veronica Gaona Residence (Kettle Run, UT)
VAG406431	Constance Capone Residence (Kettle Run, UT)
VAG406447	Brian Sandberg Residence (Kettle Run, UT)

13. Material Storage:

TABLE 3 - Material Storage		
Materials Description	Volume Stored	Spill/Stormwater Prevention Measures
Alum Feed Facility	7,800 gallons	Inside building
Methanol Feed Facility	Up to nine 55-gallon drums	Inside building

14. **Site Inspection:** Performed by Sharon Mack on October 23, 2007. The site inspection is consistent with information provided in the application package received on April 14, 2008. The application package is deemed accurate and representative with respect to operational aspects of the plant. The discharge of Outfall 001 has been relocated since the application was submitted. A copy of the October 2007 inspection report can be found within the 2007 Discharge Monitoring Report (DMR) file.

15. **Receiving Stream Water Quality and Water Quality Standards:**

a) Ambient Water Quality Data

Monitoring data is not available for the receiving stream. The nearest Department of Environmental Quality monitoring station, VAN-A10R_KET02A04, is located at the Route 761 bridge crossing.

The receiving stream is not listed on the current 303(d) list. However, the 2006 Virginia Water Quality Assessment 305(b)/303(d) Integrated Report (IR) gives an impaired classification for the following downstream segments.

▪ VAN-A19R_KET02A04

Along this segment, sufficient excursions from the single sample maximum *E. coli* bacteria criterion (4 of 12 samples – 33.3%) were recorded at DEQ's ambient water quality monitoring station 1aKET012.03 at the Route 761 crossing. This stream segment is assessed as not supporting of the recreation use goal for the 2006 water quality assessment.

▪ VAN-A19R_KET01A00

Along this segment, sufficient excursions from the single sample maximum *E. coli* bacteria criterion (3 of 14 samples – 21.4%) were recorded at DEQ's ambient water quality monitoring station 1aKET002.06 at the Route 611 crossing. This stream segment is assessed as not supporting of the recreation use goal for the 2006 water quality assessment.

The Kettle Run TMDL for *E. coli* included the impairment at segment VAN-A19R_KET01A00. All upstream discharges were taken into account when developing the TMDL and as such, the facility did receive a WLA for *E. coli* since it is an upstream source. The *E. coli* TMDL was approved by EPA on November 15, 2006.

The following Total Maximum Daily Load (TMDL) schedule has been established.

- *E. coli* – 2018

The complete planning statement is located within the permit reissuance file.

Significant portions of the Chesapeake Bay and its tributaries are listed as impaired on Virginia's 303(d) list of impaired waters for not meeting the aquatic life use support goal, and the 2006 Virginia Water Quality Assessment 305(b)/303(d) Integrated Report indicates that much of the mainstem Bay does not fully support this use support goal under Virginia's Water Quality Assessment guidelines. Nutrient enrichment is cited as one of the primary causes of impairment.

In response, the Virginia General Assembly amended the State Water Control Law in 2005 to include the *Chesapeake Bay Watershed Nutrient Credit Exchange Program*. This statute set forth total nitrogen and total phosphorus discharge restrictions within the bay watershed. Concurrently, the State Water Control Board adopted new water quality criteria for the Chesapeake Bay and its tidal tributaries. These actions necessitate the evaluation and the inclusion of nitrogen and phosphorus limits on discharges within the bay watershed.

b) Receiving Stream Water Quality Criteria

Part IX of 9 VAC 25-260(360-550) designates classes and special standards applicable to defined Virginia river basins and sections. The receiving stream Kettle Run, UT is located within Section 7a of the Potomac River Basin, and classified as a Class III water.

At all times, Class III waters must achieve a dissolved oxygen (D.O.) of 4.0 mg/L or greater, a daily average D.O. of 5.0 mg/L or greater, a temperature that does not exceed 32°C, and maintain a pH of 6.0-9.0 standard units (S.U.).

Attachment 2 details other water quality criteria applicable to the receiving stream.

Ammonia:

During the previous reissuance of the permit, staff carried forward ammonia criteria derived from ambient monitoring data and required in-stream monitoring data from the permittee. Because of the plant upgrade to 0.60 MGD (CTO issued March 26, 2008), staff is re-evaluating the derivation of ammonia criteria.

The 7Q10 and 1Q10 of the receiving stream are 0.0 MGD. In cases such as this, 90th percentile effluent pH and temperature data may be used to establish the ammonia criteria. Staff has re-evaluated the effluent data for pH and finds no significant differences from the data used to establish ammonia criteria and subsequent effluent limits in the previous permit. Therefore, the previously established pH value (7.5 S.U.) will be carried forward as part of this reissuance process. Previously established temperature values of 25°C for summer (May – November) and 15°C for winter (December – April) will also be carried forward as part of this reissuance process.

The ammonia water quality standards calculations are shown in Attachment 2.

Metals Criteria:

The Water Quality Criteria for some metals are dependent on the receiving stream's hardness (expressed as mg/l calcium carbonate). The 7Q10 of the receiving stream is zero and no ambient data is available, the effluent data for hardness can be used to determine the metals criteria. The hardness-dependent metals criteria in Attachment 2 are based on a single effluent monitoring value of 175 mg/L.

Bacteria Criteria: The Virginia Water Quality Standards (9 VAC 25-260-170 B.) states sewage discharges shall be disinfected to achieve the following criteria:

- 1) *E. coli* bacteria per 100 ml of water shall not exceed the following:

	Geometric Mean ¹	Single Sample Maximum
Freshwater <i>E. coli</i> (N/100 ml)	126	235

¹For two or more samples [taken during any calendar month].

c) Receiving Stream Special Standards

The State Water Control Board's Water Quality Standards, River Basin Section Tables (9 VAC 25-260-360, 370 and 380) designates the river basins, sections, classes, and special standards for surface waters of the Commonwealth of Virginia. The receiving stream, Kettle Run, UT, is located within Section 7a of the Potomac River Basin. This section has been designated with a special standard of "g".

Special Standard "g" refers to the Occoquan Watershed policy (9 VAC 25-410). The regulation sets stringent treatment and discharge requirements in order to improve and protect water quality, particularly since the waters are an important water supply for Northern Virginia. The regulation generally prohibits new STPs and only allows minor industrial discharges.

d) Threatened or Endangered Species

The Virginia DGIF Fish and Wildlife Information System Database was searched for records to determine if there are threatened or endangered species in the vicinity of the discharge. The following threatened or endangered species were identified within a 2 mile radius of the discharge: Dwarf Wedgemussel, Brook Floater, Upland Sandpiper, Loggerhead Shrike, Bald Eagle, Migrant Loggerhead Shrike, and Henslow's Sparrow. The limits proposed in this draft permit are protective of the Virginia Water Quality Standards and therefore, protect the threatened and endangered species found near the discharge.

The project review report can be found within the permit reissuance file.

16. Antidegradation (9 VAC 25-260-30):

All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The receiving stream has been classified as Tier 1. The critical 7Q10 and 1Q10 flows have been determined to be zero. The flow in the stream is at times comprised mainly of treated effluent and it is staff's best professional judgement that effluent dominated streams be classified as Tier 1. Permit limits proposed have been established by determining wasteload allocations which will result in attaining and/or maintaining all water quality criteria which apply to the receiving stream, including narrative criteria. These wasteload allocations will provide for the protection and maintenance of all existing uses.

17. Effluent Screening, Wasteload Allocation, and Effluent Limitation Development :

To determine water quality-based effluent limitations for a discharge, the suitability of data must first be determined. Data is suitable for analysis if one or more representative data points is equal to or above the quantification level ("QL") and the data represent the exact pollutant being evaluated.

Next, the appropriate Water Quality Standards (WQS) are determined for the pollutants in the effluent. Then, the Wasteload Allocations (WLA) are calculated. In this case since the critical flows 7Q10 and 1Q10 have been determined to be zero, the WLA's are equal to the WQS. The WLA values are then compared with available effluent data to determine the need for effluent limitations. Effluent limitations are needed if the 97th percentile of the daily effluent concentration values is greater than the acute wasteload allocation or if the 97th percentile of the four-day average effluent concentration values is greater than the chronic wasteload allocation. Effluent limitations are based on the most limiting WLA, the required sampling frequency, and statistical characteristics of the effluent data.

a) Effluent Screening:

Effluent data obtained from the permit application and 2005 – 2007 DMR submissions have been reviewed and determined to be suitable for evaluation. In 2005 and 2006 there were numerous exceedances of the established limitations for Ammonia, BOD₅, Dissolved Oxygen and Phosphorus. The facility was referred to enforcement for these permit violations and through a Consent Order has worked to resolve the exceedances. Please see Section 27 of the Fact Sheet for additional information on the Consent Order.

b) Mixing Zones and Wasteload Allocations (WLAs):

Wasteload allocations (WLAs) are calculated for those parameters in the effluent with the reasonable potential to cause an exceedance of water quality criteria. The basic calculation for establishing a WLA is the steady state complete mix equation:

$$WLA = \frac{C_o [Q_e + (f)(Q_s)] - [(C_s)(f)(Q_s)]}{Q_e}$$

- Where:
- WLA = Wasteload allocation
 - C_o = In-stream water quality criteria
 - Q_e = Design flow
 - Q_s = Critical receiving stream flow
(1Q10 for acute aquatic life criteria; 7Q10 for chronic aquatic life criteria; harmonic mean for carcinogen-human health criteria; and 30Q5 for non-carcinogen human health criteria)
 - f = Decimal fraction of critical flow
 - C_s = Mean background concentration of parameter in the receiving stream.

The water segment receiving the discharge via Outfall 001 is considered to have a 7Q10 and 1Q10 of 0.0 MGD. As such, there is no mixing zone and the WLA is equal to the C_o.

c) Effluent Limitations and Monitoring, Outfall 001 - Toxic Pollutants

9 VAC 25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Those parameters with (A)WLAs that are near effluent concentrations are evaluated for limits.

The VPDES Permit Regulation at 9 VAC 25-31-230.D. requires that monthly and weekly average limitations be imposed for continuous discharges from POTWs and monthly average and daily maximum limitations be imposed for all other continuous non-POTW discharges.

1) Ammonia as N:

Staff reevaluated pH and temperature and has concluded it is not significantly different than what was used previously to derive ammonia criteria. As a result, staff carried forward the pH and temperature data to determine new ammonia water quality criteria and new wasteload allocations (WLAs) (Attachment 2). Additionally, DEQ guidance suggests using a sole data point of 9.0 mg/L for discharges containing domestic sewage to ensure the evaluation adequately addresses the potential for ammonia to be present in the discharge containing domestic sewage (Attachment 2).

In addition, staff reevaluated the difference between summer (May – November) and winter (December – April) WLAs to determine if seasonal ammonia limits were warranted with this reissuance. Because there is a significant difference between the winter and summer WLAs, seasonal ammonia limitations are proposed with this reissuance.

9 VAC 25-410-30.B (Expansion of existing plants in the Occoquan watershed) states existing waste treatment facilities may be expanded to receive increased sewage flows; however, the degree of treatment must also be upgraded so that there will be no increase of the quantity of pollutant loadings discharged to the receiving stream. Therefore, loading limits cannot increase beyond what was originally established for the 0.246 MGD flow. As such, ammonia limitations shall be based on the most stringent of the ammonia limitations, either water quality based or Occoquan Policy based.

An ammonia value of 18 mg/L was used to calculate the ammonia loadings for the 0.246 flow tier. The 18 mg/L ammonia value would be equal to what is expected from a secondary treatment system that does not nitrify. Thus, with a flow of 0.246 MGD, multiplied by the concentration of 18 mg/L and a conversion factor of 3.785 kg/day, gives you a loading cap of 16.76 kg/day. Back calculating, you can determine the monthly average effluent limits with this 16.76 kg/day loading cap.

TABLE 4 – Occoquan Policy Ammonia (as N) Limitations		
	0.6 MGD	0.95 MGD
Monthly Average	7.4 mg/L	4.7 mg/L
Weekly Average	11 mg/L	7.0 mg/L

TABLE 5 – Water Quality based Ammonia Limitations (0.60 MGD)		
	May – November	December - April
Monthly Average	2.4 mg/l	4.6 mg/l
Weekly Average	3.2 mg/l	6.2 mg/l

TABLE 6 – Water Quality based Ammonia Limitations (0.95 MGD)		
	May – November	December - April
Monthly Average	2.4 mg/l	4.6 mg/l
Weekly Average	3.2 mg/l	6.2 mg/l

With this reissuance the most stringent of the ammonia limitations for both the 0.60 MGD and 0.95 MGD flow tiers are water quality based. As such, the limitations shown in Table 5 (0.60 MGD) and Table 6 (0.95 MGD) above are proposed with this reissuance.

2) **Metals/Organics:**

Attachment A data from the permit application was reviewed and no limits are needed.

d) Effluent Limitations and Monitoring, Outfall 001 – Conventional and Non-Conventional Pollutants

The Occoquan Policy (9 VAC 25-410), was established to regulate jurisdictional domestic sewage and set forth requirements for high performance regional treatment plants, to protect the Occoquan watershed from point source pollution. The policy establishes effluent quality requirements, as well as administrative and technical requirements for regional sewage treatment plants. The Vint Hill WWTP is not considered a regional, high-performance plant within the Occoquan watershed at this time. As such, the minimum effluent quality requirements for any regional sewage treatment plant in the Occoquan watershed (9 VAC 25-410-20) do not apply.

1) 0.60 MGD Flow Tier

pH:

No change to the pH limitation is proposed. pH limitations are set at the water quality criteria.

Dissolved Oxygen:

No change to the Dissolved Oxygen limitation is proposed.

E. coli:

No change to the *E. coli* limitation is proposed. *E. coli* limitations are in accordance with the Water Quality Standards (9 VAC25-260-170). The proposed limit of 126 n/100 mL for *E. coli* is in compliance with the approved TMDL.

BOD₅:

9 VAC 25-410-30.B (Expansion of existing plants in the Occoquan watershed) states existing waste treatment facilities may be expanded to receive increased sewage flows; however, the degree of treatment must also be upgraded so that there will be no increase of the quantity of pollutant loadings discharged to the receiving stream. Therefore, loading limits cannot increase beyond what was originally established for the 0.246 MGD flow. As such, the monthly average loading limit of 13 kg/day and the weekly average loading limit of 20 kg/day will be carried forward with this reissuance.

Loading limits were developed by multiplying the original flow for the plant (0.246 MGD) and the original monthly average concentration (14 mg/L) or the original weekly average concentration (21 mg/L) by a conversion factor of 3.785.

$$\begin{array}{cc} \text{Monthly Average} & \text{Weekly Average} \\ (0.246 \text{ MGD})(3.785)(14 \text{ mg/L}) = 13 \text{ kg/d} & (0.246 \text{ MGD})(3.785)(21 \text{ mg/L}) = 20 \text{ kg/d} \end{array}$$

Monthly average and weekly average limits were developed by multiplying the expanded flow tier (0.60 MGD) and conversion factor of 3.785 and dividing in to the loading cap established for the 0.246 MGD flow. The monthly average limit of 5.7 mg/L was rounded to 6 mg/L and the weekly average limit of 8.8 mg/L was rounded to 9 mg/L to reflect agency guidance on whole number BOD limits. The monthly average limit of 6 mg/L the weekly average limit of 9 mg/L will be carried forward with this reissuance.

$$\begin{array}{cc} \text{Monthly Average} & \text{Weekly Average} \\ \frac{(13 \text{ kg/d})}{(0.6 \text{ MGD})(3.785)} = 5.7 \text{ mg/l} & \frac{(20 \text{ kg/d})}{(0.6 \text{ MGD})(3.785)} = 8.8 \text{ mg/l} \end{array}$$

Total Suspended Solids (TSS):

9 VAC 25-410-30.B (Expansion of existing plants in the Occoquan watershed) states existing waste treatment facilities may be expanded to receive increased sewage flows; however, the degree of treatment must also be upgraded so that there will be no increase of the quantity of pollutant loadings discharged to the receiving stream. Therefore, loading limits cannot increase beyond what was originally established for the 0.246 MGD flow.

Current agency guidance, however, stipulates that limits be reported to two significant figures. In accordance with this guidance, the monthly average loading limit of 18.6 kg/day will be rounded to 19 kg/day and the weekly average loading limit of 27.9 kg/day will rounded to 28 kg/day. It is staff's best professional judgement that the increase in loadings due to rounding is insignificant and the intent of 9 VAC 25-410-30 (Expansion of existing plants in the Occoquan watershed) is maintained.

Loading limits were developed by multiplying the original flow for the plant (0.246 MGD) and the original monthly average concentration (20 mg/L) or the original weekly average concentration (30 mg/L) by a conversion factor of 3.785.

$$\begin{array}{cc} \text{Monthly Average} & \text{Weekly Average} \\ (0.246 \text{ MGD})(3.785)(20 \text{ mg/L}) = 19 \text{ kg/d} & (0.246 \text{ MGD})(3.785)(30 \text{ mg/L}) = 28 \text{ kg/d} \end{array}$$

With the rounding of the monthly average loading limit to 19 kg/day, the monthly average limit of 8.2 mg/L established with the previous issuance changes to 8.4 mg/L. The weekly average limit of 12.3 mg/L will be rounded to 12 mg/L in accordance with current agency guidance on reporting concentration limits to two significant figures.

Monthly average and weekly average limits were developed by multiplying the expanded flow tier (0.60 MGD) and conversion factor of 3.785 and dividing in to the loading cap established for the 0.246 MGD flow.

$$\begin{array}{cc} \text{Monthly Average} & \text{Weekly Average} \\ \frac{(19 \text{ kg/d})}{(0.6 \text{ MGD})(3.785)} = 8.4 \text{ mg/L} & \frac{(28 \text{ kg/d})}{(0.6 \text{ MGD})(3.785)} = 12 \text{ mg/L} \end{array}$$

2) 0.95 MGD Flow Tier

pH:

No change to the pH limitation is proposed. pH limitations are set at the water quality criteria.

Dissolved Oxygen:

No change to the D.O. limitation is proposed.

E. coli:

No change to the *E. coli* limitation is proposed. *E. coli* limitations are in accordance with the Water Quality Standards 9 VAC25-260-170. The proposed limit of 126 n/100 mL for *E. coli* is in compliance with the approved TMDL.

BOD₅:

9 VAC 25-410-30.B (Expansion of existing plants in the Occoquan watershed) states existing waste treatment facilities may be expanded to receive increased sewage flows; however, the degree of treatment must also be upgraded so that there will be no increase of the quantity of pollutant loadings discharged to the receiving stream. Therefore, loading limits cannot increase beyond what was originally established for the 0.246 MGD flow. As such, the monthly average loading limit of 13 kg/day and the weekly average loading limit of 20 kg/day will be carried forward with this reissuance.

Loading limits were developed by multiplying the original flow for the plant (0.246 MGD) and the original monthly average concentration (14 mg/L) or the original weekly average concentration (21 mg/L) by a conversion factor of 3.785.

Monthly AverageWeekly Average

$$(0.246 \text{ MGD})(3.785)(14 \text{ mg/L}) = 13 \text{ kg/d} \quad (0.246 \text{ MGD})(3.785)(21 \text{ mg/L}) = 20 \text{ kg/d}$$

Monthly average and weekly average limits were developed by multiplying the expanded flow tier (0.95 MGD) and conversion factor of 3.785 and dividing in to the loading cap established for the 0.246 MGD flow. The monthly average limit of 3.6 mg/L was rounded to 4 mg/L and the weekly average limit of 5.6 mg/L was rounded to 6 mg/L to reflect agency guidance on whole number BOD limits. The monthly average limit of 4 mg/L the weekly average limit of 6 mg/L will be carried forward with this reissuance.

Monthly AverageWeekly Average

$$\frac{(13 \text{ kg/d})}{(0.95 \text{ MGD})(3.785)} = 3.6 \text{ mg/l}$$

$$\frac{(20 \text{ kg/d})}{(0.95 \text{ MGD})(3.785)} = 5.6 \text{ mg/l}$$

Total Suspended Solids (TSS):

9 VAC 25-410-30.B (Expansion of existing plants in the Occoquan watershed) states existing waste treatment facilities may be expanded to receive increased sewage flows; however, the degree of treatment must also be upgraded so that there will be no increase of the quantity of pollutant loadings discharged to the receiving stream. Therefore, loading limits cannot increase beyond what was originally established for the 0.246 MGD flow.

Current agency guidance, however, stipulates that limits be reported to two significant figures. In accordance with this guidance, the monthly average loading limit of 18.6 kg/day will be rounded to 19 kg/day and the weekly average loading limit of 27.9 kg/day will rounded to 28 kg/day. It is staff's best professional judgement that the increase in loadings due to rounding is insignificant and the intent of 9 VAC 25-410-30 (Expansion of existing plants in the Occoquan watershed) is maintained.

Loading limits were developed by multiplying the original flow for the plant (0.246 MGD) and the original monthly average concentration (20 mg/L) or the original weekly average concentration (30 mg/L) by a conversion factor of 3.785.

Monthly AverageWeekly Average

$$(0.246 \text{ MGD})(3.785)(20 \text{ mg/L}) = 19 \text{ kg/d} \quad (0.246 \text{ MGD})(3.785)(30 \text{ mg/L}) = 28 \text{ kg/d}$$

With the rounding of the monthly average loading limit to 19 kg/day, the monthly average limit of 5.2 mg/L established with the previous issuance changes to 5.3 mg/L. The weekly average limit of 7.8 mg/L will be carried forward with this reissuance as the rounding of the weekly average loading limit to 28 kg/day does not impact the limit.

Monthly average and weekly average limits were developed by multiplying the expanded flow tier (0.95 MGD) and conversion factor of 3.785 and dividing in to the loading cap established for the 0.246 MGD flow.

Monthly Average	Weekly Average
$\frac{(19 \text{ kg/d})}{(0.95 \text{ MGD})(3.785)} = 5.3 \text{ mg/L}$	$\frac{(28 \text{ kg/d})}{(0.95 \text{ MGD})(3.785)} = 7.8 \text{ mg/L}$

e) Effluent Annual Average Limitations and Monitoring, Outfall 001 – Nutrients

Chesapeake Bay Requirements:

VPDES Regulation 9 VAC 25-31-220(D) requires effluent limitations that are protective of both the numerical and narrative water quality standards for state waters, including the Chesapeake Bay.

As discussed in Section 15, significant portions of the Chesapeake Bay and its tributaries are listed as impaired with nutrient enrichment cited as one of the primary causes. Virginia has committed to protecting and restoring the Bay and its tributaries.

The State Water Control Board adopted new Water Quality Criteria for the Chesapeake Bay in March 2005. In addition to the Water Quality Standards, there are three new regulations that necessitate nutrient limitations:

- 9 VAC 25-40 - *Regulation for Nutrient Enriched Waters and Dischargers within the Chesapeake Bay Watershed* requires discharges with design flows of ≥ 0.04 MGD to treat for TN and TP to either BNR levels (TN = 8 mg/L; TP = 1.0 mg/L) or SOA levels (TN = 3.0 mg/L and TP = 0.3 mg/L).
- 9 VAC 25-720 – *Water Quality Management Plan Regulation* sets forth TN and TP maximum wasteload allocations for facilities with design flows of ≥ 0.5 MGD limiting the mass loading from these discharges.
- 9 VAC 25-820 *General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia* was approved by the State Water Control Board on September 6, 2006 and became effective January 1, 2007. This regulation specifies and controls the nitrogen and phosphorus loadings from facilities and specifies facilities that must register under the general permit. Nutrient loadings for those facilities registered under the general permit as well as compliance schedules and other permit requirements, shall be authorized, monitored, limited, and otherwise regulated under the general permit and not this individual permit.

Monitoring for Nitrates + Nitrites, Total Kjeldahl Nitrogen, Total Nitrogen, and Total Phosphorus are included in this permit. The monitoring is needed to protect the Water Quality Standards of the Chesapeake Bay. Monitoring frequencies are set at the frequencies set forth in 9 VAC 25-820.

Annual average effluent limitations, as well as monthly and year to date calculations, for Total Nitrogen and Total Phosphorus are included in this individual permit for the 0.60 MGD and 0.95 MGD tiers.

For the 0.60 MGD flow, concentration limits of 3.0 mg/L TN annual average and 0.30 mg/L TP annual average are needed based on 9 VAC 40-70.A(4). The limits are based in part on point source grant and operation and maintenance agreement contract #440-S-08-12. Please see Attachment 3 for a copy of the grant agreement. Loading limits will be governed by the general permit mentioned above. For the 0.95 MGD flow, concentration limits of 3.0 mg/L TN annual average and 0.30 mg/L TP annual average are needed based on 9 VAC 40-70.A(4). The limits are based in part on point source grant and

operation and maintenance agreement contract #440-S-08-12. Please see Attachment 3 for a copy of the grant agreement. Loading limits will be governed by the general permit mentioned above.

The TN concentration limit for the 0.60 MGD flow and 0.95 MGD flow shall be revised to 4.0 mg/L only upon State Water Control Board approval of a regulatory amendment to 9 VAC 25-720-50.C amending the TN waste load allocation for the Vint Hill WWTP. The regulatory amendment is based on design flow certified for operation on December 31, 2010 and a 4.0 mg/L TN concentration. Should the proposed amendment not be approved, the TN concentration will remain unchanged at 3.0 mg/L.

Occoquan Policy Requirements:

9 VAC 25-410-30.B (Expansion of existing plants in the Occoquan watershed) states existing waste treatment facilities may be expanded to receive increased sewage flows; however, the degree of treatment must also be upgraded so that there will be no increase of the quantity of pollutant loadings discharged to the receiving stream. Therefore, loading limits cannot increase beyond what was originally established for the 0.246 MGD flow. The monthly average loading limit of 2.3 kg/day and the weekly average loading limit of 3.5 kg/day that were established under the previous permit were converted to lb/day to be consistent with current DEQ guidance.

Loading limits were developed by multiplying the original flow for the plant (0.246 MGD) and the original monthly average concentration (2.5 mg/L) or the original weekly average concentration (3.8 mg/L) by a conversion factor of 8.3438.

<u>Monthly Average</u>	<u>Weekly Average</u>
$(0.246 \text{ MGD})(8.3438)(2.5 \text{ mg/L}) = 5.1 \text{ lb/day}$	$(0.246 \text{ MGD})(8.3438)(3.8 \text{ mg/L}) = 7.8 \text{ lb/day}$

0.60 MGD Flow Tier:

Monthly average and weekly average limits were developed by multiplying the expanded flow tier (0.60 MGD) and conversion factor of 8.3438 and dividing in to the loading cap established for the 0.246 MGD flow. The monthly average limit of 1.0 mg/L the weekly average limit of 1.5 mg/L will be carried forward with this reissuance.

<u>Monthly Average</u>	<u>Weekly Average</u>
$\frac{(5.1 \text{ lb/day})}{(0.60 \text{ MGD})(8.3438)} = 1.0 \text{ mg/L}$	$\frac{(7.8 \text{ lb/day})}{(0.60 \text{ MGD})(8.3438)} = 1.5 \text{ mg/L}$

0.95 MGD Flow Tier:

Monthly average and weekly average limits were developed by multiplying the expanded flow tier (0.95 MGD) and conversion factor of 8.3438 and dividing in to the loading cap established for the 0.246 MGD flow. With the conversion of kg/day to lb/day, the monthly average limit of 0.60 mg/L established with the previous issuance changes to 0.64 mg/L and the weekly average limit of 1.0 mg/L established with the previous reissuance changes to 0.98 mg/L. Current agency guidance, however, stipulates that limits be reported to two significant figures. In accordance with this guidance, the monthly average limit of 0.60 mg/L and the weekly average limit of 1.0 mg/L shall be carried forward.

<u>Monthly Average</u>	<u>Weekly Average</u>
$\frac{(5.1 \text{ lb/day})}{(0.95 \text{ MGD})(8.3438)} = 0.60 \text{ mg/L}$	$\frac{(7.8 \text{ lb/day})}{(0.95 \text{ MGD})(8.3438)} = 1.0 \text{ mg/L}$

f) Effluent Limitations and Monitoring Summary.

The effluent limitations are presented in the following table. Limits were established for Flow, BOD₅, Total Suspended Solids, Ammonia, pH, Dissolved Oxygen, and *E. coli*.

The limit for Total Suspended Solids is based on Best Professional Judgement and the requirements of the Occoquan Policy set forth in 9 VAC 25-410 et. seq.

The mass loading (kg/d) for monthly and weekly averages were calculated by multiplying the concentration values (mg/l), with the flow values (in MGD) and a conversion factor of 3.785.

The mass loading (lb/d) for Total Phosphorus monthly and weekly averages were calculated by multiplying the concentration values (mg/l), with the flow values (in MGD) and a conversion factor of 8.3438.

Sample Type and Frequency are in accordance with the recommendations in the VPDES Permit Manual.

18. Antibacksliding:

The backsliding proposed with this reissuance conforms to the anti-backsliding provisions of Section 402(o) of the Clean Water Act, 9 VAC 25-31-220.L., and 40 § CFR 122.44. The ammonia limits at the 0.60 and 0.95 MGD flows are water quality based effluent limits. The revisions to the limits are allowed since the revisions comply with the water quality standards 402(o)(3) and they are consistent with antidegradation 303(d)(4)(B).

19a. Effluent Limitations/Monitoring Requirements: Outfall 001

Design flow is 0.60 MGD.

Effective Dates: During the period beginning with the permit's effective date and last ing until the expiration or the issuance of the Certificate to Operate (CTO) for 0.95 MGD.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS			
		Monthly Average		Weekly Average		Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL		NA		NA	NL	Continuous	TIRE
pH	3	NA		NA		6.0 S.U.	9.0 S.U.	1/D	Grab
BOD ₅	2,3,4	6 mg/L	13 kg/day	9 mg/L	20 kg/day	NA	NA	3D/W	8H-C
Total Suspended Solids (TSS)	2,3,4	8.4 mg/L	19 kg/day	12 mg/L	28 kg/day	NA	NA	3D/W	8H-C
Dissolved Oxygen (DO)	2,3	NA		NA		6.0 mg/L	NA	1/D	Grab
<i>E. coli</i> (Geometric Mean)	3	126 n/100mls		NA		NA	NA	3D/W ^(d)	Grab
Ammonia, as N (May – November)	3,4	2.4 mg/L		3.2 mg/L		NA	NA	3D/W	8H-C
Ammonia, as N (December – April)	3,4	4.6 mg/L		6.2 mg/L		NA	NA	3D/W	8H-C
Total Kjeldahl Nitrogen (TKN)	3,5	NL (mg/L)		NA		NA	NA	2/M	8H-C
Nitrate+Nitrite, as N	3, 5	NL (mg/L)		NA		NA	NA	2/M	8H-C
Total Nitrogen ^a	3, 5	NL (mg/L)		NA		NA	NA	2/M	Calculated
Total Nitrogen – Year to Date ^b	3, 5	NL (mg/L)		NA		NA	NA	1/M	Calculated
Total Nitrogen - Calendar Year ^{b, c}	3, 5	3.0 mg/L		NA		NA	NA	1/YR	Calculated
Total Phosphorus	2,3,4,5	1.0 mg/L	5.1 lb/day	1.5 mg/L	7.8 lb/day	NA	NA	3D/W	8H-C
Total Phosphorus – Year to Date ^b	3, 5	NL (mg/L)		NA		NA	NA	1/M	Calculated
Total Phosphorus - Calendar Year ^b	3, 5	0.30 mg/L		NA		NA	NA	1/YR	Calculated

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgement
3. Water Quality Standards
4. 9 VAC 25-410 (Occoquan Policy)
5. 9 VAC 25-40 (Nutrient Regulation)

MGD = Million gallons per day.

N/A = Not applicable.

NL = No limit; monitor and report.

S.U. = Standard units.

TIRE = Totalizing, indicating and recording equipment.

1/D = Once per day.

3D/W = Three days per week.

1/M = Once per month.

2/M = Twice per month, > 7days apart.

1/YR = Once every twelve months.

8H-C = A flow proportional composite sample collected manually or automatically, and discretely or continuously, for the entire discharge of the Monitored 8-hour period. Where discrete sampling is employed, the permittee shall collect a minimum of eight (8) aliquots for compositing. Discrete sampling may be flow proportioned either by varying the time interval between each aliquot or the volume of each aliquot. Time composite samples consisting of a minimum eight (8) grab samples obtained at hourly or smaller intervals may be collected. Where the permittee demonstrates that the discharge flow rate (gallons per minute) does not vary by =10% or more during the monitored discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

a. Total Nitrogen = Sum of TKN plus Nitrate+Nitrite

b. See Section 20.a. for the calculation of the Nutrient Calculations.

c. The TN concentration limit for the 0.60 MGD flow shall be 4.0 mg/L upon State Water Control Board approval of a regulatory amendment to 9 VAC 25-720-50.C amending the TN waste load allocation for Vint Hill WWTP based a 4.0 mg/L TN concentration. Should the proposed amendment not be approved, the TN concentration shall remain unchanged at 3.0 mg/L.

d. *E.coli* sampling shall be conducted three days per week between 10am and 4pm.

19b. Effluent Limitations/Monitoring Requirements: Outfall 001

Design flow is 0.95 MGD.

Effective Dates: Beginning with the issuance of the Certificate to Operate (CTO) for 0.95 MGD or until the expiration date of the permit.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS			
		Monthly Average		Weekly Average		Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL		NA		NA	NL	Continuous	TIRE
pH	3	NA		NA		6.0 S.U.	9.0 S.U.	1/D	Grab
BOD ₅	2,3,4	4 mg/L	13 kg/day	6 mg/L	20 kg/day	NA	NA	3D/W	8H-C
Total Suspended Solids (TSS)	2,3,4	5.3 mg/L	19 kg/day	7.8 mg/L	28 kg/day	NA	NA	3D/W	8H-C
Dissolved Oxygen (DO)	2,3	NA		NA		6.0 mg/L	NA	1/D	Grab
<i>E. coli</i> (Geometric Mean)	3	126 n/100mls		NA		NA	NA	3D/W ^(d)	Grab
Ammonia, as N (May – November)	3,4	2.4 mg/L		3.2 mg/L		NA	NA	3D/W	8H-C
Ammonia, as N (December – April)	3,4	4.6 mg/L		6.2 mg/L		NA	NA	3D/W	8H-C
Total Kjeldahl Nitrogen (TKN)	3,5	NL (mg/L)		NA		NA	NA	2/M	8H-C
Nitrate+Nitrite, as N	3, 5	NL (mg/L)		NA		NA	NA	2/M	8H-C
Total Nitrogen ^a	3, 5	NL (mg/L)		NA		NA	NA	2/M	Calculated
Total Nitrogen – Year to Date ^b	3, 5	NL (mg/L)		NA		NA	NA	1/M	Calculated
Total Nitrogen - Calendar Year ^{b, c}	3, 5	3.0 mg/L		NA		NA	NA	1/YR	Calculated
Total Phosphorus	2,3,4,5	0.60 mg/L	5.1 lb/day	1.0 mg/L	7.8 lb/day	NA	NA	3D/W	8H-C
Total Phosphorus – Year to Date ^b	3, 5	NL (mg/L)		NA		NA	NA	1/M	Calculated
Total Phosphorus - Calendar Year ^b	3, 5	0.30 mg/L		NA		NA	NA	1/YR	Calculated

The basis for the limitations codes are:

- | | | |
|--------------------------------------|---|--|
| 1. Federal Effluent Requirements | <i>MGD</i> = Million gallons per day. | <i>1/D</i> = Once per day. |
| 2. Best Professional Judgement | <i>N/A</i> = Not applicable. | <i>3D/W</i> = Three days per week. |
| 3. Water Quality Standards | <i>NL</i> = No limit; monitor and report. | <i>1/M</i> = Once per month. |
| | <i>S.U.</i> = Standard units. | <i>2/M</i> = Twice per month, >7 days apart. |
| 4. 9 VAC 25-410 (Occoquan Policy) | <i>TIRE</i> = Totalizing, indicating and recording equipment. | <i>1/YR</i> = Once every twelve months. |
| 5. 9 VAC 25-40 (Nutrient Regulation) | | |

8H-C = A flow proportional composite sample collected manually or automatically, and discretely or continuously, for the entire discharge of the Monitored 8-hour period. Where discrete sampling is employed, the permittee shall collect a minimum of eight (8) aliquots for compositing. Discrete sampling may be flow proportioned either by varying the time interval between each aliquot or the volume of each aliquot. Time composite samples consisting of a minimum eight (8) grab samples obtained at hourly or smaller intervals may be collected. Where the permittee demonstrates that the discharge flow rate (gallons per minute) does not vary by =10% or more during the monitored discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

a. Total Nitrogen = Sum of TKN plus Nitrate+Nitrite

b. See Section 20.a. for the calculation of the Nutrient Calculations.

c. The TN concentration limit for the 0.95 MGD flow shall be 4.0 mg/L upon State Water Control Board approval of a regulatory amendment to 9 VAC 25-720-50.C amending the TN waste load allocation for Vint Hill WWTP based on a 4.0 mg/L TN concentration. Should the proposed amendment not be approved, the TN concentration shall remain unchanged at 3.0 mg/L.

d. *E.coli* sampling shall be conducted three days per week between 10am and 4pm.

20. Other Permit Requirements :

- a) Part I.B. of the permit contains additional quantification levels and compliance reporting instructions.

9 VAC 25-31-190.L.4.c. requires an arithmetic mean for measurement averaging and 9 VAC 25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Specific analytical methodologies for toxics are listed in this permit section as well as quantification levels (QLs) necessary to demonstrate compliance with applicable permit limitations or for use in future evaluations to determine if the pollutant has reasonable potential to cause or contribute to a violation. Required averaging methodologies are also specified.

The calculations for the Nitrogen and Phosphorus parameters shall be in accordance with the calculations set forth in 9 VAC 25-820 *General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia*. §62.1-44.19:13 of the Code of Virginia defines how annual nutrient loads are to be calculated; this is carried forward in 9 VAC 25-820-70. As annual concentrations (as opposed to loads) are limited in the individual permit, these reporting calculations are intended to reconcile the reporting calculations between the permit programs, as the permittee is collecting a single set of samples for the purpose of ascertaining compliance with two permits.

- b) Permit Section Part I.C., details the requirements of a Pretreatment Program.

The VPDES Permit Regulation at 9 VAC 25-31-210 requires monitoring and 9 VAC 25-31-220.D. requires all discharges to protect water quality. The VPDES Permit Regulation at 9 VAC 25-31-730. through 900., and 40 CFR Part 403 requires POTWs with a design flow of >5 MGD and receiving from Industrial Users (IUs) pollutants which pass through or interfere with the operation of the POTW or are otherwise subject to pretreatment standards to develop a pretreatment program.

The Vint Hill WWTP has a current design capacity of 0.60 MGD, with future expansion for 0.95 MGD. The Fauquier County Water and Sanitation Authority also own and operate the Remington Wastewater Treatment Plant (VA0076805) and the Marshall WWTP (VA0031763) with design flows of 2.0 MGD and 0.64 MGD, respectively. The combined design capacity of the three plants is 3.24 MGD.

The Pretreatment Program for Fauquier County was originally approved on November 6, 1995. A pretreatment program condition is included to survey the industrial users and submit the results, including the identification of any Significant Industrial Users (SIUs), to the DEQ-Northern Regional Office within 180 days of the permit's effective date. If SIUs are identified, the permittee must develop a program within one year of their identification. Also, if SIUs are identified, the permittee must submit an annual pretreatment report on the implementation of their pretreatment legal authority by January 31st of each year.

Program requirements and reporting are found within this section of the permit.

- c) Sewage Sludge Management Plan, Sludge Monitoring and Additional Reporting Requirements.

1. Regulations:

The VPDES Permit Regulation (VAC 25-31-10 et seq.), has incorporated technical standards for the use or disposal of sewage sludge, specifically land application and surface disposal, promulgated under 40 CFR Part 503.

The Permit Regulation (9 VAC 25-31-420) also establishes the standards for the use or disposal of sewage sludge. This part establishes standards that consist of general requirements, pollutant limits, management practices, and operational standards for the final use or disposal of sewage sludge generated during the treatment of domestic sewage in the treatment works.

2. Evaluations:
Sludge Classification:

Digested sludge from the Vint Hill WWTP is either transported to the Fauquier County Landfill for disposal or to the Remington WWTP for eventual land application. The Remington WWTP is considered as Class I sludge management facility. The permit regulation (9 VAC 25-31-500) defines a Class I sludge management facility as any POTW which is required to have an approved pretreatment program defined under Part VII of the VPDES Permit Regulation (9 VAC 25-31-730 to 900) and/or any treatment works treating domestic sewage sludge that has been classified as a Class I facility by the Board because of the potential for its sewage sludge use or disposal practice to adversely affect public health and the environment.

Sludge Pollutant Concentration:

The average pollutant concentrations from sewage sludge analyses provided as part of the Vint Hill STP application for the permit reissuance are presented in Table 4. The analysis results are from samples collected from the Remington WWTP, which includes sludge from the Vint Hill WWTP. Samples were collected on March 28, 2003, May 29, 2003, November 24, 2003, February 11, 2004, May 21, 2004 and December 8, 2005.

Table 7 –Remington WWTP Results / Vint Hill WWTP

Pollutant	Average Concentration (mg/kg dry weight)	Sample Type
Arsenic	10.97	Composite
Cadmium	4.88	Composite
Copper	621.66	Composite
Lead	55.58	Composite
Mercury	2.28	Composite
Molybdenum	10.48	Composite
Nickel	23.75	Composite
Selenium	9.32	Composite
Zinc	1,166.66	Composite

All sewage sludge applied to the land must meet the ceiling concentration for pollutants, listed in Table 5. Sewage sludge applied to the land must also meet either pollutant concentration limits, cumulative pollutant loading rate limits, or annual pollutant loading rate limits, also listed in Table 5 below.

Cumulative pollutant loading limits or annual pollutant loading limits may be applied to sewage sludge exceeding pollutant concentration limits but meeting the ceiling concentrations, depending upon the levels of treatment achieved and the form (bulk or bag) of sludge applied. It should be noted that ceiling concentration limits are instantaneous values and pollutant concentration limits are monthly average values. Calculations of cumulative pollutant loading should be based on the monthly average values and the annual whole sludge application rate.

Table 8- SEWAGE SLUDGE POLLUTANT LIMITS

Pollutant	Ceiling Concentration Limits for All Sewage Sludge Applied to Land (mg/kg)*	Pollutant Concentration Limits for EQ and PC Sewage Sludge (mg/kg)*	Cumulative Pollutant Loading Rate Limits for CPLR Sewage Sludge (kg/hectare)	Annual Pollutant Rate Limits for APLR Sewage Sludge (kg/hectare/356 day period)**
Arsenic	75	41	41	2.0
Cadmium	85	39	39	1.9
Copper	4,300	1,500	1,500	75
Lead	840	300	300	15
Mercury	57	17	17	0.85
Molybdenum	75	---	---	---
Nickel	420	420	420	21
Selenium	100	100	100	5.0
Zinc	7,500	2,800	2,800	140
Applies to:	All sewage sludge that is land applied	Bulk sewage sludge and bagged sewage sludge	Bulk sewage sludge	Bagged sewage
From VPDES Permit Reg. Part VI	Table 1, 9 VAC 25-31-540	Table 3, 9 VAC 25-31-540	Table 2, 9 VAC 25-31-540	Table 4, 9 VAC 25-31-540

*Dry-weight basis

**Bagged sewage sludge is sold or given away in a bag or other container.

Comparing data from Table 4 with Table 5 shows that metal concentrations are significantly below the ceiling and PC concentration requirements.

3. Options for Meeting Land Application:

There are four equally safe options for meeting land application requirements. The options include the Exceptional Quality (EQ) option, the Pollutant Concentration (PC) option, the Cumulative Pollutant Loading Rate (CPLR) option, and the Annual Pollutant Loading Rate (APLR) option.

Pollutant Concentration (PC) is the type of sludge that may only be applied in bulk and is subject to general requirements and management practices; however, tracking of pollutant loadings to the land is not required. The sludge from both the Vint Hill WWTP and the Remington WWTP is considered Pollutant Concentration (PC) sewage sludge for the following reasons:

- a) The bulk sewage sludge from both the Vint Hill WWTP and the Remington WWTP meet the PC limits in Table 1 of VPDES Permit Regulation Part VI, 9 VAC 25-31-540.
- b) The VPDES Permit Regulation, Part VI, Subpart D, (9 VAC 25-31-690 through 720) establishes the requirements for pathogen reduction in sewage sludge. Both the Vint Hill WWTP and Remington WWTP are considered to produce a Class B sludge in accordance with the regulation (9 VAC 25-31-710.B.2. - Class B -Alternative 2. Alternative 2 defines Class B sludge as "Sewage sludge that is used or disposed that has been treated in a process that is equivalent to a Process to Significantly Reduce Pathogens (PSRP), as described in (9 VAC 25-31-710.D.).

Both the Vint Hill WWTP and the Remington WWTP treat sludge using an aerobic digestion process to reduce pathogens in accordance with the requirements of 9 VAC 25-31-710.D.3

c) The VPDES Permit Regulation, Part VI, Subpart D, (9 VAC 25-31-690 through 720) also establishes the requirements for Vector Attraction Reduction in sewage sludge. Based on the information supplied with the VPDES Sludge Application, both the Vint Hill WWTP and the Remington WWTP meet the requirements for Vector Attraction Reduction as defined by 9 VAC 25-31-720.B.1. Vector attraction reduction can be demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of two percent or less aerobically in the laboratory in a bench-scale unit for 30 additional days at 20 degrees Celcius. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 15 percent, vector attraction is achieved.

4) Parameters to be Monitored:

In order to assure the sludge quality, the following parameters require monitoring: Arsenic, Cadmium, Copper, Lead, Mercury, Molybdenum, Nickel, Selenium, and Zinc.

In order to ensure that proper nutrient management and pH management practices are employed, the following parameters are required: pH, Total Kjeldahl Nitrogen, Ammonia Nitrogen, Nitrate Nitrogen, Total Phosphorus, Total Potassium, and Alkalinity (lime treated sludge should be analyzed for percent calcium carbonate equivalence). The nutrient and pH monitoring requirements apply only if the permittee land applies their own sludge. Since Remington WWTP (which receives sludge from Vint Hill WWTP) has contracted the land application responsibilities to Recyc Systems, Incorporated of Remington, Virginia, they are not required to monitor for nutrients, pH, Total Potassium and Alkalinity.

Soil monitoring in conjunction with soil productivity information is critical, especially for frequent applications, to making sound sludge application decisions from both an environmental and an agronomic standpoint. Since Remington WWTP (which receives sludge from Vint Hill) has contracted the land application responsibilities to Recyc Systems, Incorporated of Remington, Virginia, they are not required to perform soil monitoring.

5) Monitoring Frequency :

The monitoring frequency is based on the amount of sewage sludge applied in a given 365-day period. The permit application indicates that the total dry metric tons of sewage sludge generated at Vint Hill WWTP are 80 dry metric tons per 365-day period. In the permit manual, the monitoring frequency for facilities that produce up to 290 metric tons per 365-day period is once per year. Because digested sludge from the Vint Hill WWTP is either transported to the Fauquier County Landfill or to the Remington WWTP for eventual land application, monitoring will not be required with this reissuance. Should sludge management practices change at the facility, the permit may be reopened and modified to address additional sludge monitoring and reporting requirements.

6) Sampling:

Representative sampling is an important aspect of monitoring. Because the pollutant limits pertain to the quality of the final sewage sludge applied to the land, samples must be collected after the last treatment process prior to land application. Composite samples are required for all samplings from the Remington WWTP which receives sludge from the Vint Hill WWTP.

7) Sludge Management Plan (SMP):

The SMP is required to be part of the VPDES permit application. The VPDES Sewage Sludge Permit Application Form and its attachments will constitute the applicant's SMP. Any proposed sewage treatment works treating domestic sewage must submit a SMP with the appropriate VPDES permit application forms at least 180 days prior to the date proposed for commencing operations. The permittee shall conduct all sewage sludge use or disposal activities in accordance with the SMP approved with the issuance of this permit. Any proposed changes in the sewage sludge use or disposal practices or procedures followed by the permittee shall be documented and submitted for Virginia Department of Environmental Quality review and approval no less than 90 days prior to the effective date of the changes.

Upon approval, the SMP becomes an enforceable part of the permit. The permit may be modified or alternatively revoked and reissued to incorporate limitations/conditions necessitated by substantial changes in sewage sludge use or disposal practices.

Vint Hill WWTP has submitted the VPDES Sewage Sludge Permit Application Form and its attachments. Because digested sludge from the Vint Hill WWTP is either transported to the Fauquier County Landfill or to the Remington WWTP for eventual land application, the Remington WWTP SMP serves as the SMP for the facility. The Remington WWTP SMP dated March 1996 is on file at the Northern Regional Office of the Department of Environmental Quality.

8) Reporting Requirements:

The reporting requirements are for POTWs with a design flow rate equal to or greater than 1 MGD (majors), POTWs that serve a population of 10,000 or greater, and Class I sludge management facilities. Because digested sludge from the Vint Hill WWTP is either transported to the Fauquier County Landfill or to the Remington WWTP for eventual land application, monitoring and reporting will not be required with this reissuance. Should sludge management practices change at the facility, the permit may be reopened and modified to address additional sludge monitoring and reporting requirements.

Remington WWTP, which receives digested sludge from Vint Hill WWTP, is required to provide the results of all monitoring performed in accordance with Part I.A. of their permit (VA0076805), and information on management practices and appropriate certifications no later than February 19th of each year (as required by the 503 regulations) to the Northern Regional Office of the Department of Environmental Quality. Each report must document the previous calendar year's activities. Additionally, the Remington WWTP is required to submit an annual report by February 19th of each year.

21. **Other Special Conditions :**

- a) 95% Capacity Reopener. The VPDES Permit Regulation at 9 VAC 25-31-200.B.2. requires all POTWs and PVOTWs develop and submit a plan of action to DEQ when the monthly average influent flow to their sewage treatment plant reaches 95% or more of the design capacity authorized in the permit for each month of any three consecutive month period. This facility is a POTW.
- b) Indirect Dischargers. Required by VPDES Permit Regulation, 9 VAC 25-31-280 B.9 for POTWs and PVOTWs that receive waste from someone other than the owner of the treatment works.
- c) O&M Manual Requirement. Required by Code of Virginia §62.1-44.19; Sewage Collection and Treatment Regulations, 9 VAC 25-790; VPDES Permit Regulation, 9 VAC 25-31-190.E. The permittee shall submit for a statement confirming the accuracy and completeness of the current O&M Manual to the Department of Environmental Quality, Northern Regional Office (DEQ-NRO) by June 30, 2009. Future changes to the facility must be addressed by the submittal of a revised O&M Manual within 90 days of the changes. Non-compliance with the O&M Manual shall be deemed a violation of the permit.
- d) Licensed Operator Requirement. The Code of Virginia at §54.1-2300 et seq. and the VPDES Permit Regulation at 9 VAC 25-31-200 D, and Rules and Regulations for Waterworks and Wastewater Works Operators (18 VAC 160-20-10 et seq.) requires licensure of operators. This facility requires a Class II operator.
- e) Reliability Class. The Sewage Collection and Treatment Regulations at 9 VAC 25-790 requires sewage treatment works to achieve a certain level of reliability in order to protect water quality and public health consequences in the event of component or system failure. Reliability means a measure of the ability of the treatment works to perform its designated function without failure or interruption of service. The facility is required to meet a reliability Class of I based on the public water supply of Lake Manassas and the requirements of the Occoquan Policy (9 VAC 25-410).
- f) CTC, CTO Requirement. The Code of Virginia § 62.1-44.19; Sewage Collection and Treatment Regulations, 9 VAC 25-790 requires that all treatment works treating wastewater obtain a Certificate to Construct prior to commencing construction and to obtain a Certificate to Operate prior to commencing operation of the treatment works.

- g) Water Quality Criteria Reopener. The VPDES Permit Regulation at 9 VAC 25-31-220 D. requires establishment of effluent limitations to ensure attainment/maintenance of receiving stream water quality criteria. Should effluent monitoring indicate the need for any water quality-based limitations, this permit may be modified or alternatively revoked and reissued to incorporate appropriate limitations.
- h) Water Quality Criteria Monitoring. State Water Control Law §62.1-44.21 authorizes the Board to request information needed to determine the discharge's impact on State waters. States are required to review data on discharges to identify actual or potential toxicity problems, or the attainment of water quality goals, according to 40 CFR Part 131, Water Quality Standards, subpart 131.11. To ensure that water quality criteria are maintained, the permittee is required to analyze the facility's effluent from Outfall 001 for the substances noted in Attachment A of this VPDES permit once during the fourth year of the permit for a total of one (1) monitoring period. The data shall be submitted with the next application for reissuance.
- i) Sludge Reopener. The VPDES Permit Regulation at 9 VAC 25-31-200.C.4. requires all permits issued to treatment works treating domestic sewage (including sludge-only facilities) include a reopener clause allowing incorporation of any applicable standard for sewage sludge use or disposal promulgated under Section 405(d) of the CWA. The facility includes a sewage treatment works.
- j) Sludge Use and Disposal. The VPDES Permit Regulation at 9 VAC 25-31-100.P., 220.B.2., and 420-720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on their sludge use and disposal practices and to meet specified standards for sludge use and disposal. The facility includes a treatment works treating domestic sewage
- k) In-stream Monitoring. The State Water Control Law at §62.1-44.21 authorizes the State Water Control Board to request information needed to determine the discharge's impact on State Waters. No receiving stream data are currently available; therefore, in-stream monitoring is being required to assess background levels. This monitoring data may be used to derive water quality criteria dependent upon the receiving stream characteristics as well as assess compliance with such water quality criteria as changes in temperature. In-stream monitoring shall be conducted at a minimum of once per month. The sampling location shall be downstream of Outfall 001 (Kettle Run) where the stream and effluent are completely mixed. The following parameters shall be monitored: pH, Dissolved Oxygen, Temperature and Hardness. In-stream monitoring results shall be submitted with the Discharge Monitoring Report for the month in which monitoring was conducted.
- l) E3/E4. 9 VAC 25-40-70 B authorizes DEQ to approve an alternate compliance method to the technology-based effluent concentration limitations as required by subsection A of this section. Such alternate compliance method shall be incorporated into the permit of an Exemplary Environmental Enterprise (E3) facility or an Extraordinary Environmental Enterprise (E4) facility to allow the suspension of applicable technology-based effluent concentration limitations during the period the E3 or E4 facility has a fully implemented environmental management system that includes operation of installed nutrient removal technologies at the treatment efficiency levels for which they were designed.
- m) Nutrient Reopener. 9 VAC 25-40-70 A authorizes DEQ to include technology-based annual concentration limits in the permits of facilities that have installed nutrient control equipment, whether by new construction, expansion or upgrade. 9 VAC 25-31-390 A authorizes DEQ to modify VPDES permits to promulgate amended water quality standards.

Permit Section Part II. Part II of the permit contains standard conditions that appear in all VPDES Permits. In general, these standard conditions address the responsibilities of the permittee, reporting requirements, testing procedures and records retention.

23. Changes to the Permit from the Previously Issued Permit:

a) Special Conditions:

1. An E3/E4 special condition was added to the permit.
2. A TMDL reopener special condition was added to the permit.
3. The Discharge Locations special condition was removed from the permit as it is no longer necessary due to relocation of Outfall 001 to Kettle Run.
4. The Treatment Works Closure Plan special condition was removed from the permit as it is no longer necessary. The facility is not privately owned and flow exceeds 40,000 gpd.
5. The Water Quality Criteria Monitoring special condition language was modified to remove references to the 0.246 MGD flow as it is no longer necessary due to the facility's expansion to 0.60 MGD.
6. The *E. coli* compliance schedule was removed from the permit as the facility has achieved compliance with *E. coli* limits.
7. The Nitrate compliance schedule was removed from the permit as the facility has achieved compliance with Nitrate limits.

b) Monitoring and Effluent Limitations:

1. The discharge location of Outfall 001 has been relocated to Kettle Run with this reissuance. All references to Outfall 001 discharge to South Run have been removed.
2. At the 0.60 MGD flow, the monthly average and weekly average TSS loadings were rounded to two significant figures in accordance with current agency guidance.
3. At the 0.60 MGD flow, the monthly average TSS limit was revised to 8.4 mg/L due to the rounding of the monthly average loading to two significant figures.
4. At the 0.60 MGD flow, the weekly average TSS limit was rounded from 12.3 mg/L to 12 mg/L in accordance with current guidance on the use of two significant figures.
5. At the 0.60 MGD flow, seasonal ammonia limits are being implemented with this reissuance. A summer (May – November) monthly average water quality based limit of 2.4 mg/L and a weekly average water quality based limit of 3.2 mg/L is proposed. A winter (December – April) monthly average water quality based limit of 4.6 mg/L and a weekly average water quality based limit of 6.2 mg/L is proposed.
6. At the 0.95 MGD flow, the monthly average and weekly average TSS loadings were rounded to two significant figures in accordance with current agency guidance.
7. At the 0.95 MGD flow, the monthly average TSS limit was revised to 5.3 mg/L due to the rounding of the monthly average loading to two significant figures.
8. At the 0.95 MGD flow, seasonal ammonia limits are being implemented with this reissuance. A summer (May – November) monthly average water quality based limit of 2.4 mg/L and a weekly average water quality based limit of 3.2 mg/L is proposed. A winter (December – April) monthly average water quality based limit of 4.6 mg/L and a weekly average water quality based limit of 6.2 mg/L is proposed.
9. Monitoring for Nitrate + Nitrite and TKN was established at the 0.60 MGD and 0.95 MGD flows in accordance with 9 VAC 25-820.
10. Concentration limits for Total Nitrogen and Total Phosphorus were revised per 9 VAC-25-40 (Nutrient Regulation) and per point source grant and operation and maintenance agreement contract #440-S-08-12 for the 0.60 MGD and 0.95 MGD flow tiers. Total Nitrogen and Total Phosphorus loading limits were removed from this permit as they are governed under the facility's watershed general permit (VAN020053).
11. Monitoring frequencies for nitrogen compounds and phosphorus compounds were revised in accordance with 9 VAC 25-820.
12. Local loading limits for Total Phosphorus (monthly average and weekly average) established by the Occoquan Policy were converted to lb/day to be consistent with current DEQ guidance.

24. Variances/Alternate Limits or Conditions: N/A**25. Public Notice Information:**

First Public Notice Date: February 4, 2009 Second Public Notice Date: February 11, 2009

Public Notice Information is required by 9 VAC 25-31-280 B. All pertinent information is on file and may be inspected, and copied by contacting the: DEQ Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193, Telephone No. (703) 583-3853, sdmackert@deq.virginia.gov. See Attachment 4 for a copy of the public notice document.

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing if public response is significant. Requests for public hearings shall state the reason why a hearing is requested, the nature of the issues proposed to be raised in the public hearing and a brief explanation of how the requester's interests would be directly and adversely affected by the proposed permit action. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given.

26. 303 (d) Listed Stream Segments and Total Max. Daily Loads (TMDL):

The receiving assessment unit is not listed on the current 303(d) list. However, there are downstream impairments for bacteria. An *E. coli* TMDL was approved by EPA on November 15, 2006. While the receiving assessment unit was not included in the TMDL, the facility did receive a WLA of 1.65 E+12 cfu/year for *E. coli* since it is an upstream source. The proposed limit of 126 n/100 mL for *E. coli* is in compliance with the approved TMDL.

TMDL Reopener: This special condition is to allow the permit to reopened if necessary to bring it in compliance with any applicable TMDL that may be developed and approved for the receiving stream.

27. Interpretation of Occoquan Policy:

With the previous reissuance of this permit, the expansion of the Vint Hill WWTP required DEQ to determine which section of the Occoquan Policy was applicable to the expansion.

- 9 VAC 25-410-20 (Long-range policy) which states in part that “the number of high-performance regional plants which shall be permitted in this watershed is not more than three, but preferably two, generally located as follows: One plant in the Fauquier County/Warrenton Area and one plant in the Manassas are to serve the surrounding area in Price William, Fairfax and Loudoun counties”.
- 9 VAC 25-410-30 (Expansion of existing plants in the Occoquan watershed) which states in part that “existing waste treatment facilities may be expanded to receive increased sewage flows; however, the degree of treatment must also be upgraded so that there will be no increase of the quantity of pollutant loadings discharged to the receiving stream”. The Vint Hill WWTP predates the Occoquan Policy and is allowed to expand under the Policy.

No definition of regional is found within the Policy or any related regulation. Therefore, staff made an interpretation as to how the Policy governed the proposed expansion. DEQ, with the concurrence of VDH, developed the following implementation of the Policy:

- If the expanded flows are to be discharged to South Run, the location as of the previous reissuance, then 9 VAC 25-410-30 shall govern the discharge until the flows approach 1.0 MGD. Flows that approach 1.0 MGD shall be considered subject to the requirements of a regional plant as provided in 9 VAC 25-410-20. Staff believed the added requirements were justified due to the proximity of the discharge to the drinking water intake in Lake Manassas.
- If the expanded flows are to be discharged to the Kettle Run watershed, such that the effluent does not enter Lake Manassas, staff's position was that flows less than 1.0 MGD be subject to 9 VAC 25-410-30. Staff believed this was an appropriate implementation as the nearest drinking water intake is located 37 miles and two reservoirs down river. Additionally, STPs with design flow rates of 1.0 MGD or greater are considered major dischargers and staff likened the term “regional” to “major”.

It was also staff's opinion that regardless of design flows, the expansion of the Vint Hill WWTP beyond the original 0.246 MGD design flow predestined the plant to be the regional plant prescribed by the Occoquan Policy. That is, the above interpretation and implementation are based on:

- The expectation that no other STP will be proposed for this general area; and
- The Vint Hill WWTP will eventually be the regional plant prescribed by 9 VAC 25-410-20 of the Occoquan Policy.

With this reissuance, expanded flows are discharged to the Kettle Run watershed and the requirements of 9 VAC 25-410-30 are applicable. Should the facility expand to a flow of 1.0 MGD or greater, the facility shall be considered a high-performance regional plant. At that time, the minimum effluent quality requirements for any regional sewage treatment plant in the Occoquan watershed (9 VAC 25-410-20) shall apply in lieu of Occoquan Policy caps.

28. Additional Comments:

Previous Board Action(s):

Vint Hill WWTP was originally referred to enforcement on July 6, 2005 for permit effluent violations for BOD₅, Total Phosphorus, Ammonia, Dissolved Oxygen, and for the late submittal of biannual status reports for achieving compliance with *E. coli* limits. The original Consent Order between DEQ and the Fauquier County Water and Sanitation Authority (FCWSA) became effective March 17, 2006. The Order required FCWSA to upgrade the Vint Hill WWTP by February 1, 2007, and close the old system by May 1, 2007.

Due to problems with the contractor hired to perform the upgrades, an Amended Order became effective June 29, 2007. This Amended Order required FCWSA to complete the upgrade no later than August 1, 2007 and to close the old treatment system no later than November 1, 2007.

The Amended Consent Order was cancelled August 1, 2008 as FCWSA had complied with all the terms of the Amended Consent Order.

Staff Comments: None

Public Comment: No public comments were received.

EPA Checklist: The checklist can be found in Attachment 5.